

BCS 04-5004-PCT_OK1 Verringerte Aktivität_SEQUENZPROTOKOLL.ST25
SEQUENCE LISTING

<110> Bayer CropScience GmbH

<120> Plants with reduced activity of a starch phosphorylating enzyme

<130> BCS 04-5004-PCT

<150> EP04090088.8

<151> 2004-03-05

<150> EP04090121.7

<151> 2004-03-29

<150> US60/550,022

<151> 2004-03-05

<150> EP04090203.3

<151> 2004-05-21

<150> EP04090484.9

<151> 2004-12-09

<160> 11

<170> PatentIn version 3.1

<210> 1

<211> 3591

<212> DNA

<213> Arabidopsis thaliana

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Lys Lys Lys Asp Gly Ser Gly Thr Lys Val Arg Leu Asn Val Arg Leu
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 Asp His Gln Val Asn Phe Gly Asp His Val Ala Met Phe Gly Ser Ala
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 Lys Glu Ile Gly Ser Trp Lys Lys Lys Ser Pro Leu Asn Trp Ser Glu
 100 105 110
 Asn Gly Trp Val Cys Glu Leu Glu Leu Asp Gly Gly Gln Val Leu Glu
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 Val Cys His Trp Asp Ala Thr Arg Glu Thr Leu Asp Leu Pro Gln Glu
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 Phe Met Arg Ser Asn Asp His Gly Asn Arg Glu Val Gly Arg Asn Trp
 225 230 235 240
 Asp Thr Ser Gly Leu Glu Gly Thr Ala Leu Lys Met Val Glu Gly Asp
 245 250 255
 Arg Asn Ser Lys Asn Trp Trp Arg Lys Leu Glu Met Val Arg Glu Val
 260 265 270
 Ile Val Gly Ser Val Glu Arg Glu Glu Arg Leu Lys Ala Leu Ile Tyr
 275 280 285
 Ser Ala Ile Tyr Leu Lys Trp Ile Asn Thr Gly Gln Ile Pro Cys Phe
 290 295 300
 Glu Asp Gly Gly His His Arg Pro Asn Arg His Ala Glu Ile Ser Arg
 305 310 315 320
 Leu Ile Phe Arg Glu Leu Glu His Ile Cys Ser Lys Lys Asp Ala Thr
 325 330 335

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 Pro Glu Glu Val Leu Val Ala Arg Lys Ile His Pro Cys Leu Pro Ser
 340 345 350

Phe Lys Ala Glu Phe Thr Ala Ala Val Pro Leu Thr Arg Ile Arg Asp
 355 360 365

Ile Ala His Arg Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys
 370 375 380

His Thr Ile Gln Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu
 385 390 395 400

Ile Ala Thr Glu Ala Met Leu Gln Arg Ile Thr Glu Thr Pro Gly Lys
 405 410 415

Tyr Ser Gly Asp Phe Val Glu Gln Phe Lys Ile Phe His Asn Glu Leu
 420 425 430

Lys Asp Phe Phe Asn Ala Gly Ser Leu Thr Glu Gln Leu Asp Ser Met
 435 440 445

Lys Ile Ser Met Asp Asp Arg Gly Leu Ser Ala Leu Asn Leu Phe Phe
 450 455 460

Glu Cys Lys Lys Arg Leu Asp Thr Ser Gly Glu Ser Ser Asn Val Leu
 465 470 475 480

Glu Leu Ile Lys Thr Met His Ser Leu Ala Ser Leu Arg Glu Thr Ile
 485 490 495

Ile Lys Glu Leu Asn Ser Gly Leu Arg Asn Asp Ala Pro Asp Thr Ala
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Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu Ile Gly Leu Glu Asp
 515 520 525

Tyr Phe Phe Val Leu Leu Ser Arg Phe Leu Asn Ala Leu Glu Thr Met
 530 535 540

Gly Gly Ala Asp Gln Leu Ala Lys Asp Val Gly Ser Arg Asn Val Ala
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Ser Trp Asn Asp Pro Leu Asp Ala Leu Val Leu Gly Val His Gln Val
 565 570 575

Gly Leu Ser Gly Trp Lys Gln Glu Glu Cys Leu Ala Ile Gly Asn Glu
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Leu Leu Ala Trp Arg Glu Arg Asp Leu Leu Glu Lys Glu Gly Glu Glu
 595 600 605

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 Asp Gly Lys Thr Ile Trp Ala Met Arg Leu Lys Ala Thr Leu Asp Arg
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Ala Arg Arg Leu Thr Ala Glu Tyr Ser Asp Leu Leu Leu Gln Ile Phe
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Pro Pro Asn Val Glu Ile Leu Gly Lys Ala Leu Gly Ile Pro Glu Asn
 645 650 655

Ser Val Lys Thr Tyr Thr Glu Ala Glu Ile Arg Ala Gly Ile Ile Phe
 660 665 670

Gln Ile Ser Lys Leu Cys Thr Val Leu Leu Lys Ala Val Arg Asn Ser
 675 680 685

Leu Gly Ser Glu Gly Trp Asp Val Val Val Pro Gly Ser Thr Ser Gly
 690 695 700

Thr Leu Val Gln Val Glu Ser Ile Val Pro Gly Ser Leu Pro Ala Thr
 705 710 715 720

Ser Gly Gly Pro Ile Ile Leu Leu Val Asn Lys Ala Asp Gly Asp Glu
 725 730 735

Glu Val Ser Ala Ala Asn Gly Asn Ile Ala Gly Val Met Leu Leu Gln
 740 745 750

Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg Gln Glu Lys
 755 760 765

Ile Val Phe Val Thr Cys Asp Asp Asp Asp Lys Val Ala Asp Ile Arg
 770 775 780

Arg Leu Val Gly Lys Phe Val Arg Leu Glu Ala Ser Pro Ser His Val
 785 790 795 800

Asn Leu Ile Leu Ser Thr Glu Gly Arg Ser Arg Thr Ser Lys Ser Ser
 805 810 815

Ala Thr Lys Lys Thr Asp Lys Asn Ser Leu Ser Lys Lys Lys Thr Asp
 820 825 830

Lys Lys Ser Leu Ser Ile Asp Asp Glu Glu Ser Lys Pro Gly Ser Ser
 835 840 845

Ser Ser Asn Ser Leu Leu Tyr Ser Ser Lys Asp Ile Pro Ser Gly Gly
 850 855 860

Ile Ile Ala Leu Ala Asp Ala Asp Val Pro Thr Ser Gly Ser Lys Ser
 865 870 875 880

Pro Ala Asp Gly Lys Tyr Val Arg Leu Thr Val Asp Tyr Ser Lys
1130 1135 1140

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 Lys Arg Leu Thr Val Asp Ser Val Phe Arg Gln Gln Leu Gly Gln
 1145 1150 1155

Arg Leu Gly Ser Val Gly Phe Phe Leu Glu Arg Asn Phe Gly Cys
 1160 1165 1170

Ala Gln Asp Val Glu Gly Cys Leu Val Gly Glu Asp Val Tyr Ile
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Val Gln Ser Arg Pro Gln Pro Leu
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 Gly Gly Arg Pro Arg Arg Gly Leu Val Leu Pro Pro Pro Gly Val Gly 20 25
 gcg ggt gtg ctg ctc cgc cgg gga gcg atg gcg ctc cct ggg cgg cgc 147
 Ala Gly Val Leu Leu Arg Arg Gly Ala Met Ala Leu Pro Gly Arg Arg 30 35 40 45
 ggc ttc gcg tgc cgc ggg aga tcc gcg gcc tcg gcg gca gag aga aca 195
 Gly Phe Ala Cys Arg Gly Arg Ser Ala Ala Ser Ala Ala Glu Arg Thr 50 55 60
 aag gag aaa aag aga aga gat tct tca aag cag cca ttg gtg cat ctc 243
 Lys Glu Lys Lys Arg Arg Asp Ser Ser Lys Gln Pro Leu Val His Leu 65 70 75
 cag gtt tgt cta gag cac cag gtt aag ttt ggt gag cat gta ggc att 291
 Gln Val Cys Leu Glu His Gln Val Lys Phe Gly Glu His Val Gly Ile 80 85 90
 atc ggt tcc aca aag gag ctt ggt tca tgg gag gag cag gtt gaa ctg 339
 Ile Gly Ser Thr Lys Glu Leu Gly Ser Trp Glu Glu Gln Val Glu Leu 95 100 105
 gaa tgg act aca aat ggt tgg gtc tgc cag ctt aag ctc cct gga gaa 387
 Glu Trp Thr Thr Asn Gly Trp Val Cys Gln Leu Lys Leu Pro Gly Glu 110 115 120 125

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aaa Lys	ata Ile	tgg Trp	gaa Glu 145	gat Asp	ggt Gly	aat Asn	aac Asn	cgt Arg 150	gtt Val	gtt Val	gag Glu	ctg Leu	ccg Pro 155	aag Lys	gat Asp	483
ggt Gly	aag Lys	ttt Phe 160	gat Asp	ata Ile	gta Val	tgc Cys	cac His 165	tgg Trp	aat Asn	aga Arg	aca Thr	gaa Glu 170	gag Glu	cca Pro	tta Leu	531
gaa Glu	ctt Leu 175	tta Leu	gga Gly	aca Thr	cca Pro	aag Lys 180	ttt Phe	gag Glu	ttg Leu	gtc Val	gga Gly 185	gaa Glu	gct Ala	gaa Glu	aag Lys	579
aat Asn 190	act Thr	ggc Gly	gag Glu	gat Asp	gct Ala 195	tca Ser	gca Ala	tct Ser	gta Val	act Thr 200	ttt Phe	gca Ala	cct Pro	gaa Glu	aaa Lys 205	627
gtt Val	caa Gln	gat Asp	att Ile	tca Ser 210	gtt Val	gtt Val	gag Glu	aat Asn	ggt Gly 215	gat Asp	cca Pro	gca Ala	cca Pro	gag Glu 220	gcc Ala	675
gag Glu	tca Ser	agc Ser	aaa Lys 225	ttt Phe	ggt Gly	ggg Gly	caa Gln	tgg Trp 230	caa Gln	gga Gly	agt Ser	aaa Lys	act Thr 235	gtt Val	ttc Phe	723
atg Met	aga Arg	tca Ser 240	aat Asn	gag Glu	cat His	ctg Leu	aat Asn 245	aag Lys	gag Glu	gct Ala	gat Asp	agg Arg 250	atg Met	tgg Trp	gat Asp	771
aca Thr	act Thr 255	ggg Gly	ctt Leu	gat Asp	gga Gly	ata Ile 260	gca Ala	ctg Leu	aaa Lys	ctg Leu	gtg Val 265	gag Glu	ggc Gly	gat Asp	aaa Lys	819
gca Ala 270	tcc Ser	agg Arg	aac Asn	tgg Trp	tgg Trp 275	cgg Arg	aag Lys	tta Leu	gag Glu	gtt Val 280	gtt Val	cgc Arg	ggg Gly	ata Ile	ttg Leu 285	867
tca Ser	gaa Glu	tct Ser	ttt Phe	gat Asp 290	gac Asp	cag Gln	agt Ser	cgt Arg	ctg Leu 295	ggg Gly	gcc Ala	ctt Leu	gta Val	tac Tyr 300	tca Ser	915
gct Ala	att Ile	tat Tyr	ctg Leu 305	aag Lys	tgg Trp	att Ile	tat Tyr	aca Thr 310	ggt Gly	cag Gln	ata Ile	tcg Ser	tgc Cys 315	ttt Phe	gaa Glu	963
gat Asp	ggt Gly	ggc Gly 320	cac His	cat His	cgg Arg	cct Pro	aac Asn 325	aaa Lys	cat His	gct Ala	gag Glu	ata Ile 330	tcg Ser	agg Arg	caa Gln	1011
ata Ile	ttc Phe 335	cgt Arg	gaa Glu	ctt Leu	gaa Glu	atg Met 340	atg Met	tat Tyr	tat Tyr	ggg Gly	aaa Lys 345	acc Thr	aca Thr	tca Ser	gcc Ala	1059
aag Lys 350	gat Asp	gtt Val	ctc Leu	gtg Val	att Ile 355	cgc Arg	aaa Lys	att Ile	cat His	ccc Pro 360	ttt Phe	tta Leu	cct Pro	tca Ser	ttt Phe 365	1107
aag Lys	tca Ser	gag Glu	ttt Phe	aca Thr 370	gcc Ala	tct Ser	gtc Val	cct Pro	cta Leu 375	aca Thr	cga Arg	att Ile	cgt Arg	gat Asp 380	att Ile	1155
gct Ala	cac His	cgg Arg	aat Asn 385	gac Asp	atc Ile	cca Pro	cat His	gat Asp 390	ctc Leu	aag Lys	caa Gln	gaa Glu	atc Ile 395	aag Lys	cat His	1203

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act Thr	ata Ile	caa Gln 400	aac Asn	aaa Lys	ctt Leu	cat His	cgt Arg 405	aat Asn	gct Ala	gga Gly	cct Pro	gag Glu 410	gat Asp	ctt Leu	att Ile	1251
gct Ala	aca Thr 415	gaa Glu	gtc Val	atg Met	ctt Leu	gct Ala 420	agg Arg	att Ile	act Thr	aag Lys	acc Thr 425	cct Pro	gga Gly	gaa Glu	tac Tyr	1299
agt Ser 430	gaa Glu	aca Thr	ttt Phe	gtt Val	gaa Glu 435	caa Gln	ttc Phe	acg Thr	ata Ile	ttt Phe 440	tat Tyr	agc Ser	gaa Glu	cta Leu	aaa Lys 445	1347
gat Asp	ttc Phe	ttc Phe	aat Asn	gct Ala 450	ggc Gly	agc Ser	cta Leu	ttt Phe	gag Glu 455	caa Gln	ctg Leu	gag Glu	tcc Ser	atc Ile 460	aag Lys	1395
gaa Glu	tct Ser	ctg Leu	aac Asn 465	gag Glu	tca Ser	ggc Gly	tta Leu	gaa Glu 470	gtt Val	ctc Leu	tca Ser	tcc Ser	ttt Phe 475	gtg Val	gaa Glu	1443
acc Thr	aaa Lys	agg Arg 480	agt Ser	ttg Leu	gac Asp	caa Gln	gtg Val 485	gat Asp	cat His	gca Ala	gaa Glu	gat Asp 490	ttg Leu	gat Asp	aaa Lys	1491
aat Asn 495	gat Asp	acc Thr	att Ile	caa Gln	att Ile	ttg Leu 500	atg Met	act Thr	acc Thr	ttg Leu	caa Gln 505	tca Ser	tta Leu	tct Ser	tct Ser	1539
cta Leu 510	aga Arg	tcg Ser	gtt Val	cta Leu	atg Met 515	aag Lys	ggc Gly	ctt Leu	gaa Glu	agt Ser 520	ggc Gly	ctt Leu	aga Arg	aat Asn	gat Asp 525	1587
gcg Ala	cct Pro	gat Asp	aat Asn	gct Ala 530	ata Ile	gca Ala	atg Met	cga Arg	caa Gln 535	aag Lys	tgg Trp	cgc Arg	ctt Leu	tgt Cys 540	gaa Glu	1635
att Ile	agt Ser	ctt Leu	gag Glu 545	gat Asp	tat Tyr	tca Ser	ttt Phe	gtt Val 550	ctg Leu	tta Leu	agc Ser	aga Arg	ttc Phe 555	atc Ile	aat Asn	1683
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aga Arg 575	aat Asn	act Thr	act Thr	cta Leu	tgg Trp	gat Asp 580	act Thr	act Thr	ctt Leu	gat Asp	gcc Ala 585	ctt Leu	gtc Val	att Ile	ggc Gly	1779
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gaa Glu	ggc Gly	tgt Cys	gaa Glu 625	gat Asp	ggc Gly	aaa Lys	tat Tyr	att Ile 630	tgg Trp	tca Ser	cta Leu	aga Arg	ctt Leu 635	aaa Lys	gct Ala	1923
aca Thr	ctg Leu	gac Asp 640	aga Arg	gca Ala	cgg Arg	aga Arg	tta Leu 645	acg Thr	gaa Glu	gag Glu	tac Tyr	tct Ser 650	gaa Glu	gca Ala	ctt Leu	1971
ctt Leu	tct Ser 655	ata Ile	ttc Phe	cct Pro	gaa Glu	aaa Lys 660	gta Val	atg Met	gtt Val	att Ile	ggg Gly 665	aaa Lys	gcc Ala	ctt Leu	gga Gly	2019

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ggc Gly	att Ile	gtt Val	ttt Phe	cag Gln 690	gta Val	tct Ser	aaa Lys	cta Leu	tgc Cys 695	aca Thr	gta Val	ctt Leu	cag Gln	aaa Lys 700	gca Ala	2115
att Ile	cga Arg	gaa Glu	gta Val 705	ctt Leu	gga Gly	tca Ser	act Thr	ggc Gly 710	tgg Trp	gat Asp	gtt Val	ctt Leu	gtt Val 715	cct Pro	gga Gly	2163
gtg Val	gcc Ala	cat His 720	gga Gly	act Thr	ctg Leu	atg Met	cgg Arg 725	gtg Val	gaa Glu	aga Arg	att Ile	ctt Leu 730	cct Pro	gga Gly	tca Ser	2211
tta Leu	cct Pro 735	tca Ser	tct Ser	gtc Val	aaa Lys	gaa Glu 740	cct Pro	gtg Val	gtt Val	cta Leu	att Ile 745	gta Val	gat Asp	aag Lys	gct Ala	2259
gat Asp 750	gga Gly	gat Asp	gaa Glu	gag Glu 755	gtc Val 755	aaa Lys	gct Ala	gct Ala	ggg Gly	gat Asp 760	aat Asn	ata Ile	gtt Val	ggg Gly	gtt Val 765	2307
att Ile	ctt Leu	ctt Leu	cag Gln 770	gaa Glu 770	cta Leu	cct Pro	cac His	ctt Leu	tca Ser 775	cat His	ctt Leu	ggg Gly	gtt Val	aga Arg 780	gct Ala	2355
cgt Arg	caa Gln	gag Glu	aat Asn 785	gtt Val	gta Val	ttt Phe	gta Val	act Thr 790	tgt Cys	gaa Glu	tat Tyr	gat Asp	gac Asp 795	aca Thr	gtt Val	2403
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gtc Val 830	tct Ser	aca Thr	gaa Glu	cca Pro	aat Asn 835	agt Ser	aca Thr	ggg Gly	aat Asn	cca Pro 840	ttt Phe	caa Gln	cag Gln	aaa Lys	ctc Leu 845	2547
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tct Ser	aag Lys	caa Gln	aaa Lys 865	agc Ser	aaa Lys	tca Ser	gga Gly	gtg Val 870	aat Asn	ggg Gly	agt Ser	ttt Phe	gct Ala 875	gct Ala	ctt Leu	2643
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gat Asp 910	caa Gln	gga Gly	gtt Val	cca Pro	gca Ala 915	gcc Ala	ttt Phe	aga Arg	gtc Val	cct Pro 920	tct Ser	ggg Gly	gct Ala	gtg Val	ata Ile 925	2787
cca Pro	ttt Phe	gga Gly	tca Ser	atg Met 930	gag Glu	gat Asp	gcg Ala	ctc Leu	aag Lys 935	aaa Lys	agt Ser	gga Gly	tca Ser	ctg Leu 940	gaa Glu	2835

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ggt	gaa	gtt	gat	agc	ctg	gcg	ttg	gag	cta	caa	gca	ata	att	tca	cat	2931
Gly	Glu	Val	Asp	Ser	Leu	Ala	Leu	Glu	Leu	Gln	Ala	Ile	Ile	Ser	His	
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Gln	Asp	Val	Arg	Leu	Ile	Val	Arg	Ser	Ser	Ala	Asn	Val	Glu	Asp	Leu	
990					995					1000					1005	
gct	ggt	atg	tca	gct	gct	ggt	ctc	tat	gat	tca	att	ccc	aat	gtc		3072
Ala	Gly	Met	Ser	Ala	Ala	Gly	Leu	Tyr	Asp	Ser	Ile	Pro	Asn	Val		
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Ser	Leu	Met	Asp	Pro	Cys	Ala	Phe	Gly	Ala	Ala	Val	Gly	Lys	Val		
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Trp	Ala	Ser	Leu	Tyr	Thr	Arg	Arg	Ala	Ile	Leu	Ser	Arg	Arg	Ala		
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Ala	Gly	Val	Tyr	Gln	Arg	Asp	Ala	Thr	Met	Ala	Val	Leu	Val	Gln		
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gaa	ata	ctg	cag	cca	gat	ctc	tcc	ttc	gtg	ctt	cat	act	gtt	tgc		3252
Glu	Ile	Leu	Gln	Pro	Asp	Leu	Ser	Phe	Val	Leu	His	Thr	Val	Cys		
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ccc	gct	gac	cat	gac	ccc	aag	gtt	gtc	cag	gct	gag	gtc	gcc	cct		3297
Pro	Ala	Asp	His	Asp	Pro	Lys	Val	Val	Gln	Ala	Glu	Val	Ala	Pro		
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ggg	ctg	ggt	gaa	acg	ctt	gct	tca	gga	acc	cgt	ggc	acc	ccg	tgg		3342
Gly	Leu	Gly	Glu	Thr	Leu	Ala	Ser	Gly	Thr	Arg	Gly	Thr	Pro	Trp		
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agg	ctg	tca	tgt	aac	aaa	ttc	gat	gga	aaa	gtt	gcc	act	ctt	gcc		3387
Arg	Leu	Ser	Cys	Asn	Lys	Phe	Asp	Gly	Lys	Val	Ala	Thr	Leu	Ala		
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Phe	Ser	Asn	Phe	Ser	Glu	Glu	Met	Val	Val	His	Asn	Ser	Gly	Pro		
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gcc	aat	gga	gaa	gta	att	cgt	ctt	act	gtt	gat	tac	agc	aag	aag		3477
Ala	Asn	Gly	Glu	Val	Ile	Arg	Leu	Thr	Val	Asp	Tyr	Ser	Lys	Lys		
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cca	ttg	tcg	gtt	gat	aca	acc	ttt	agg	aag	cag	ttt	ggt	cag	cga		3522
Pro	Leu	Ser	Val	Asp	Thr	Thr	Phe	Arg	Lys	Gln	Phe	Gly	Gln	Arg		
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ctg	gct	gcg	att	ggc	cag	tat	ctg	gag	cag	aag	ttc	ggg	agt	gca		3567
Leu	Ala	Ala	Ile	Gly	Gln	Tyr	Leu	Glu	Gln	Lys	Phe	Gly	Ser	Ala		
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cag	gat	gtg	gaa	ggt	tgc	ctg	gtt	ggg	aaa	gat	att	ttt	ata	gtg		3612
Gln	Asp	Val	Glu	Gly	Cys	Leu	Val	Gly	Lys	Asp	Ile	Phe	Ile	Val		
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<212> PRT

<213> Oryza sativa

<400> 4

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 35 40 45

Cys Arg Gly Arg Ser Ala Ala Ser Ala Ala Glu Arg Thr Lys Glu Lys
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Lys Arg Arg Asp Ser Ser Lys Gln Pro Leu Val His Leu Gln Val Cys
 65 70 75 80

Leu Glu His Gln Val Lys Phe Gly Glu His Val Gly Ile Ile Gly Ser
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Thr Lys Glu Leu Gly Ser Trp Glu Glu Gln Val Glu Leu Glu Trp Thr
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Glu Phe Lys Phe Val Ile Phe Leu Val Gly Gly Lys Asp Lys Ile Trp
 130 135 140

Glu Asp Gly Asn Asn Arg Val Val Glu Leu Pro Lys Asp Gly Lys Phe
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Asp Ile Val Cys His Trp Asn Arg Thr Glu Glu Pro Leu Glu Leu Leu
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Gly Thr Pro Lys Phe Glu Leu Val Gly Glu Ala Glu Lys Asn Thr Gly
 180 185 190

Glu Asp Ala Ser Ala Ser Val Thr Phe Ala Pro Glu Lys Val Gln Asp
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 Lys Phe Gly Gly Gln Trp Gln Gly Ser Lys Thr Val Phe Met Arg Ser
 225 230 235 240
 Asn Glu His Leu Asn Lys Glu Ala Asp Arg Met Trp Asp Thr Thr Gly
 245 250 255
 Leu Asp Gly Ile Ala Leu Lys Leu Val Glu Gly Asp Lys Ala Ser Arg
 260 265 270
 Asn Trp Trp Arg Lys Leu Glu Val Val Arg Gly Ile Leu Ser Glu Ser
 275 280 285
 Phe Asp Asp Gln Ser Arg Leu Gly Ala Leu Val Tyr Ser Ala Ile Tyr
 290 295 300
 Leu Lys Trp Ile Tyr Thr Gly Gln Ile Ser Cys Phe Glu Asp Gly Gly
 305 310 315 320
 His His Arg Pro Asn Lys His Ala Glu Ile Ser Arg Gln Ile Phe Arg
 325 330 335
 Glu Leu Glu Met Met Tyr Tyr Gly Lys Thr Thr Ser Ala Lys Asp Val
 340 345 350
 Leu Val Ile Arg Lys Ile His Pro Phe Leu Pro Ser Phe Lys Ser Glu
 355 360 365
 Phe Thr Ala Ser Val Pro Leu Thr Arg Ile Arg Asp Ile Ala His Arg
 370 375 380
 Asn Asp Ile Pro His Asp Leu Lys Gln Glu Ile Lys His Thr Ile Gln
 385 390 395 400
 Asn Lys Leu His Arg Asn Ala Gly Pro Glu Asp Leu Ile Ala Thr Glu
 405 410 415
 Val Met Leu Ala Arg Ile Thr Lys Thr Pro Gly Glu Tyr Ser Glu Thr
 420 425 430
 Phe Val Glu Gln Phe Thr Ile Phe Tyr Ser Glu Leu Lys Asp Phe Phe
 435 440 445
 Asn Ala Gly Ser Leu Phe Glu Gln Leu Glu Ser Ile Lys Glu Ser Leu
 450 455 460
 Asn Glu Ser Gly Leu Glu Val Leu Ser Ser Phe Val Glu Thr Lys Arg
 465 470 475 480

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Ser Leu Asp Gln Val₄₈₅ Asp His Ala Glu Asp₄₉₀ Leu Asp Lys Asn Asp₄₉₅ Thr
 Ile Gln Ile Leu₅₀₀ Met Thr Thr Leu Gln₅₀₅ Ser Leu Ser Ser Leu₅₁₀ Arg Ser
 Val Leu Met₅₁₅ Lys Gly Leu Glu Ser₅₂₀ Gly Leu Arg Asn Asp₅₂₅ Ala Pro Asp
 Asn Ala₅₃₀ Ile Ala Met Arg Gln₅₃₅ Lys Trp Arg Leu Cys₅₄₀ Glu Ile Ser Leu
 Glu₅₄₅ Asp Tyr Ser Phe Val₅₅₀ Leu Leu Ser Arg Phe₅₅₅ Ile Asn Thr Leu Glu₅₆₀
 Ala Leu Gly Gly Ser₅₆₅ Ala Ser Leu Ala Lys₅₇₀ Asp Val Ala Arg Asn₅₇₅ Thr
 Thr Leu Trp Asp₅₈₀ Thr Thr Leu Asp Ala₅₈₅ Leu Val Ile Gly Ile₅₉₀ Asn Gln
 Val Ser Phe₅₉₅ Ser Gly Trp Lys Thr₆₀₀ Asp Glu Cys Ile Ala₆₀₅ Ile Gly Asn
 Glu Ile₆₁₀ Leu Ser Trp Lys Gln₆₁₅ Lys Gly Leu Ser Glu₆₂₀ Ser Glu Gly Cys
 Glu₆₂₅ Asp Gly Lys Tyr Ile₆₃₀ Trp Ser Leu Arg Leu₆₃₅ Lys Ala Thr Leu Asp₆₄₀
 Arg Ala Arg Arg Leu₆₄₅ Thr Glu Glu Tyr Ser₆₅₀ Glu Ala Leu Leu Ser₆₅₅ Ile
 Phe Pro Glu Lys₆₆₀ Val Met Val Ile Gly₆₆₅ Lys Ala Leu Gly Ile₆₇₀ Pro Asp
 Asn Ser Val₆₇₅ Arg Thr Tyr Thr Glu₆₈₀ Ala Glu Ile Arg Ala₆₈₅ Gly Ile Val
 Phe Gln Val₆₉₀ Ser Lys Leu Cys₆₉₅ Thr Val Leu Gln Lys₇₀₀ Ala Ile Arg Glu
 Val₇₀₅ Leu Gly Ser Thr Gly₇₁₀ Trp Asp Val Leu Val₇₁₅ Pro Gly Val Ala His₇₂₀
 Gly Thr Leu Met Arg₇₂₅ Val Glu Arg Ile Leu₇₃₀ Pro Gly Ser Leu Pro₇₃₅ Ser
 Ser Val Lys Glu₇₄₀ Pro Val Val Leu Ile₇₄₅ Val Asp Lys Ala Asp₇₅₀ Gly Asp

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Glu Glu Val Lys Ala Ala Gly Asp Asn Ile Val Gly Val Ile Leu Leu
 755 760 765
 Gln Glu Leu Pro His Leu Ser His Leu Gly Val Arg Ala Arg Gln Glu
 770 775 780
 Asn Val Val Phe Val Thr Cys Glu Tyr Asp Asp Thr Val Thr Asp Val
 785 790 795 800
 Tyr Leu Leu Glu Gly Lys Tyr Ile Arg Leu Glu Ala Ser Ser Ile Asn
 805 810 815
 Val Asn Leu Ser Ile Val Ser Glu Lys Asn Asp Asn Ala Val Ser Thr
 820 825 830
 Glu Pro Asn Ser Thr Gly Asn Pro Phe Gln Gln Lys Leu Gln Asn Glu
 835 840 845
 Phe Ser Leu Pro Ser Asp Ile Glu Met Pro Leu Gln Met Ser Lys Gln
 850 855 860
 Lys Ser Lys Ser Gly Val Asn Gly Ser Phe Ala Ala Leu Glu Leu Ser
 865 870 875 880
 Glu Ala Ser Val Glu Ser Ala Gly Ala Lys Ala Ala Ala Cys Arg Thr
 885 890 895
 Leu Ser Val Leu Ala Ser Leu Ser Asn Lys Val Tyr Ser Asp Gln Gly
 900 905 910
 Val Pro Ala Ala Phe Arg Val Pro Ser Gly Ala Val Ile Pro Phe Gly
 915 920 925
 Ser Met Glu Asp Ala Leu Lys Lys Ser Gly Ser Leu Glu Ser Phe Thr
 930 935 940
 Ser Leu Leu Glu Lys Ile Glu Thr Ala Lys Val Glu Asn Gly Glu Val
 945 950 955 960
 Asp Ser Leu Ala Leu Glu Leu Gln Ala Ile Ile Ser His Leu Ser Pro
 965 970 975
 Pro Glu Glu Thr Ile Ile Phe Leu Lys Arg Ile Phe Pro Gln Asp Val
 980 985 990
 Arg Leu Ile Val Arg Ser Ser Ala Asn Val Glu Asp Leu Ala Gly Met
 995 1000 1005
 Ser Ala Ala Gly Leu Tyr Asp Ser Ile Pro Asn Val Ser Leu Met
 1010 1015 1020

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Asp Pro Cys Ala Phe Gly Ala Ala Val Gly Lys Val Trp Ala Ser
 1025 1030 1035

Leu Tyr Thr Arg Arg Ala Ile Leu Ser Arg Arg Ala Ala Gly Val
 1040 1045 1050

Tyr Gln Arg Asp Ala Thr Met Ala Val Leu Val Gln Glu Ile Leu
 1055 1060 1065

Gln Pro Asp Leu Ser Phe Val Leu His Thr Val Cys Pro Ala Asp
 1070 1075 1080

His Asp Pro Lys Val Val Gln Ala Glu Val Ala Pro Gly Leu Gly
 1085 1090 1095

Glu Thr Leu Ala Ser Gly Thr Arg Gly Thr Pro Trp Arg Leu Ser
 1100 1105 1110

Cys Asn Lys Phe Asp Gly Lys Val Ala Thr Leu Ala Phe Ser Asn
 1115 1120 1125

Phe Ser Glu Glu Met Val Val His Asn Ser Gly Pro Ala Asn Gly
 1130 1135 1140

Glu Val Ile Arg Leu Thr Val Asp Tyr Ser Lys Lys Pro Leu Ser
 1145 1150 1155

Val Asp Thr Thr Phe Arg Lys Gln Phe Gly Gln Arg Leu Ala Ala
 1160 1165 1170

Ile Gly Gln Tyr Leu Glu Gln Lys Phe Gly Ser Ala Gln Asp Val
 1175 1180 1185

Glu Gly Cys Leu Val Gly Lys Asp Ile Phe Ile Val Gln Ser Arg
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Pro Gln Pro
 1205

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<211> 12

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<213> Oryza sativa, Arabidopsis thaliana

<400> 5

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<213> Solanum tuberosum

<400> 6

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<400> 7

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<212> PRT

<213> Solanum tuberosum

<400> 8

Arg Phe Val Asn Ala Val Glu
1 5

<210> 9

<211> 7

<212> PRT

<213> Solanum tuberosum

<400> 9

Glu Gly Ser Glu Asp Gly Lys
1 5

<210> 10

<211> BCS 04-5004-PCT_OK1 Verringerte Aktivität_SEQUENZPROTOKOLL.ST25
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ggg ctt gaa gac tat gca ttt gtt ctt ttg agc agg ttt gtg aat gca 96
Gly Leu Glu Asp Tyr Ala Phe Val Leu Leu Ser Arg Phe Val Asn Ala
20 25 30

gtt gaa gct cta ggc gga gct gat tgg ctt gca gag aat gta aca gtg 144
Val Glu Ala Leu Gly Gly Ala Asp Trp Leu Ala Glu Asn Val Thr Val
35 40 45

aaa aac att agt tct tgg aat gat cca att gga gca ctt aca gtt gga 192
Lys Asn Ile Ser Ser Trp Asn Asp Pro Ile Gly Ala Leu Thr Val Gly
50 55 60

atc caa cag cta ggt ata tct ggt tgg aag ccc gag gaa tgc aaa gct 240
Ile Gln Gln Leu Gly Ile Ser Gly Trp Lys Pro Glu Glu Cys Lys Ala
65 70 75 80

gtt gga aat gaa ctt ttg tca tgg aaa gaa agg ggt att tca gaa att 288
Val Gly Asn Glu Leu Leu Ser Trp Lys Glu Arg Gly Ile Ser Glu Ile
85 90 95

gaa ggc agc gaa gat ggt aag act ata tgg gca tta aga cta aaa gcg 336
Glu Gly Ser Glu Asp Gly Lys Thr Ile Trp Ala Leu Arg Leu Lys Ala
100 105 110

act ctt gat aga agt cga agg tta act gag gag tat tcc gag aca ctt 384
Thr Leu Asp Arg Ser Arg Arg Leu Thr Glu Glu Tyr Ser Glu Thr Leu
115 120 125

ctc caa ata ttc cct gaa a 403
Leu Gln Ile Phe Pro Glu
130

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<211> 134

<212> PRT

<213> Solanum tuberosum

<400> 11

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 Ala Asp Ala Ser Ile Ala Met Arg Gln Lys Trp Arg Leu Cys Glu Ile
 1 5 10 15

Gly Leu Glu Asp Tyr Ala Phe Val Leu Leu Ser Arg Phe Val Asn Ala
 20 25 30

Val Glu Ala Leu Gly Gly Ala Asp Trp Leu Ala Glu Asn Val Thr Val
 35 40 45

Lys Asn Ile Ser Ser Trp Asn Asp Pro Ile Gly Ala Leu Thr Val Gly
 50 55 60

Ile Gln Gln Leu Gly Ile Ser Gly Trp Lys Pro Glu Glu Cys Lys Ala
 65 70 75 80

Val Gly Asn Glu Leu Leu Ser Trp Lys Glu Arg Gly Ile Ser Glu Ile
 85 90 95

Glu Gly Ser Glu Asp Gly Lys Thr Ile Trp Ala Leu Arg Leu Lys Ala
 100 105 110

Thr Leu Asp Arg Ser Arg Arg Leu Thr Glu Glu Tyr Ser Glu Thr Leu
 115 120 125

Leu Gln Ile Phe Pro Glu
 130